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ingly, and must be trained to apply his knowledge to the discovery of new truths.

An excellent feature of the book is the stress laid upon the importance of consulting the larger text-books and the standard works of reference in connection with the work in the laboratory. By doing this the student will early learn where to look for full information on any branch of the subject, and he will be led to form the very beneficial habit of consulting freely the larger works and sets of journals.

The first five of the twenty chapters of the book are devoted largely to general definitions, nomenclature, and the writing of equations. The student then ascertains by experiment the behavior of the salts of the more common bases with various reagents, and from the actual results thus obtained he formulates a method for the qualitative analysis of any mixture of the bases. The different groups of metals are then taken up in detail, and the characteristic reactions of the bases are given. At the beginning of the chapters, questions upon the occurrence and uses of the various elements are introduced. Chapter nineteen is upon the detection of acids, and here, most unfortunately, the author has departed from his plan and has given an arbitrary scheme of analysis instead of allowing the student to learn by experiment the analytical properties of each acid, and to devise his own method for the identification of any acid in a mixture. The book closes with descriptions of a few flame and blowpipe tests, and a statement of certain precautions to be observed in the use of platinum vessels.

In some places the author has employed terms which good usage would not sanction. Thus the term "acid" salt is used instead of primary salt or secondary salt, sulphocyanide instead of sulphocyanate; and the words "hydrate" and "hydroxide" are employed interchangeably. Again we see the term "ferrosium" used to designate iron in the ferrous condition and the words "full metallic reagent" applied to tertiary sodium phosphate. Apart from such minor faults, however, the book shows careful preparation, and both paper and presswork are excellent. It is well adapted for elementary instruction in qualitative analysis, and in the hands of an able teacher the plan followed in the manual is well calculated to produce enthusiastic and self-reliant students.

L. M. Dennis.

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Principles of Education. By MALCOLM MACVICAR, Ph.D., LL.D.
pp. 178. Ginn & Co.

This book consists of a presentation of principles underlying education, together with a brief discussion of training for the profession of teaching. Each principle is formally expressed, and then followed by a discussion calculated to amplify and illustrate the general statement.

The discussion of Habit is of unusual interest and cannot fail to be suggestive to teachers who realize the significance of the work in which they are engaged. Paragraphs 29 and 30 may be recommended especially to the attention of the reader, as they touch upon points which are far too much neglected in the home and in the school.

In paragraphs 38, 39, and 40, the author treats of the acquisition of knowledge in such a clear and forcible manner that every sentence carries conviction with it.

Under "Principles of Pupils' Work" (pp. 98-117), the writer makes very clear the laws upon which the acquisition of knowledge depends, while he gives an idea of the real nature of Method. If he had first discussed Analysis and Synthesis, the subject of Method might have been simplified and thus rendered much more intelligible to the ordinary reader. Without a clear understanding of Analysis and Synthesis it is difficult for many people to realize that Induction is not identical with Analysis, and that in every case the induction itself is purely synthetic. That Dr. MacVicar does understand this (though he does not use the terms) is shown in the statement that Induction and Deduction must go hand in hand (p. 110). Later he shows that Deduction is the third step in what he calls the Inductive Method. It would seem that by Deduction the writer means here generalization, in which case we should heartily agree with him. The generalization is in reality an Induction, however, and is the expression of the universal law discovered through the analysis of particulars. The only processes or methods in education, and indeed, in all thinking, are Analysis and Synthesis, of which both Induction and Deduction are but combinations. While Dr. MacVicar has not emphasized this fact sufficiently, perhaps, he has at least given Method its true place in education, inasmuch as he has shown that it belongs to the pupil and not to the teacher, except to the extent that the teacher is a pupil. We may add to this, that no teacher can succeed as an instructor until he recognizes this fact, that Method is the direction in which the mental activity of the learner moves; backward or forward, *i.e.*, analytically or synthetically. The teacher who does recognize this truth very soon learns to adjust his plans and devices to the needs of the pupil, and prepares to follow in the line indicated by the pupil's tendencies.

A thorough study of this part of Dr. MacVicar's book, *viz.* "Principles of Pupils' Work," ought to give teachers power to make a just estimate of much of the unscientific discussion upon so-called "Methods" to be found in the columns of current educational journals.

Another valuable service performed by Dr. MacVicar is the presentation of the Four Steps of Instruction. 1. Observation. 2. Comparison and Classification. 3. Deduction (Generalization). 4. Verification. This arrangement does not differ essen-

tially from that of the famous Four Steps of Instruction which occupy such an important place in the pedagogical system of Herbart. 1. Merken (Observation.) 2. Association (Comparison.) 3. System (Classification and Generalization.) 4. Philosophical Method (Application.) This discussion is only second in importance to that upon Method, and depends directly upon it.

Of the whole book probably the "Principles of Pupils' Work" is the most important, as it illuminates points that are concealed in the blackness of darkness from the majority of teachers, and at best are but dimly seen by the more advanced students of pedagogy.

While emphasizing this part of the book, we must not overlook the discussion upon "Principles of Teachers' Work," and "Special Principles of Teaching." From a study of these topics the reader may gain useful suggestions regarding the true place of the teacher which he must be careful to keep, lest he prove more of a hindrance than a help to the pupil. Dr. MacVicar says, "Teachers in seeking to condition their pupils properly for their work, must note carefully what they cannot do for them." In his eagerness to do and to secure results, the teacher loses sight of this point, and not infrequently is in danger of doing his pupils permanent injury.

Of the book as a whole we are glad to be able to judge favorably. We commend especially the neat binding, the clear type, the excellent choice of words, the concise and direct style, and the comprehensive arrangement which includes so much, while it occupies so little space. These are all points to be appreciated by the student.

Every page and indeed every sentence bears evidence of profound and orderly thinking, as well as of an accurate knowledge of the questions discussed. We have perhaps no scarcity of literature upon educational subjects, but we have no cause to complain of too many books possessing the characteristics enumerated above, and we heartily recommend "Principles of Education" to both parents and teachers.

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Selected Orations and Letters of Cicero, with Historical Introduction, an Outline of the Roman Constitution, Notes, Excursuses, Vocabulary, and Index. By HAROLD W. JOHNSTON, Ph.D., Professor of Latin in Illinois College, and late Principal of Whipple Academy. Albert, Scott & Co. : Chicago. 1892. pp. 797.

The plan of this book is novel in several respects. The editor has selected those orations and letters of Cicero which centre about the Catilinarian Conspiracy, with the aim of making a single period of Cicero's life the object of study, and, by confining attention to this, of securing a deeper insight into Cicero's character and the administration of the Roman state in his day. The matter is arranged as follows: The First and Second Orations against